stroke and the delivery stroke, one-way valves are mounted in the inlet pipe portion and in the outlet pipe portion, respectively, which valves guarantee a correct through-flow of the medium to be pumped.

The diaphragm pump of the aforesaid US Patent is mounted in a dead pipe portion of the pipe system, which application is very suitable for pumping slurries having a relatively high temperature. In the case of slurries having a lower temperature, it is less essential to protect the diaphragm pump from said hot, corrosive slurries, and the diaphragm pump may be mounted in the pipe system as mentioned in the introduction. For constructional reasons, the pipe system is disposed vertically, with the inlet being positioned below the outlet.

It has become apparent that hydrodynamic phenomena occur in the slurry within the diaphragm housing during operation of the diaphragm pump, which phenomena cause sufficiently large pressure differences between positions at the top of the diaphragm housing and positions at the bottom of the diaphragm housing, resulting in a disadvantageous deformation of the flexible diaphragm, in particular during the delivery stroke.

Said disadvantageous deformations of the flexible diaphragm place a limit on the extent to which the diaphragm can be loaded, which makes it necessary to select a larger diaphragm when the suction stroke volume has a particular value, so as to ensure a sufficiently long life.

The object of the invention is to provide a solution for the above problem and to provide a diaphragm pump in which the asymmetrical deformation of the diaphragm during operation is limited where necessary, so that the deformation of the diaphragm will increase elsewhere without this leading to an overload. Thus the output capacity of a selected diaphragm dimension will be maximally utilised whilst obtaining an optimum life span.

According to the invention, the diaphragm pump is to that end characterized in that the circular clamping member is provided, on

CLAIMS

1. A diaphragm pump for pumping aggressive and/or abrasive media, such as slurries, comprising a diaphragm housing mounted in a substantially vertically disposed pipe system, which substantially vertically disposed pipe system comprises at least one inlet and at least one outlet positioned some distance above the inlet, as well as at least one substantially circular, flexible diaphragm, which diaphragm is movable within the diaphragm housing under the influence of a working liquid that can be pressurised, with the circular outer edge of the diaphragm being clamped down in the diaphragm housing by means of a circular clamping member, **characterized in that** the circular clamping member is provided, on the circumferential edge thereof, with a flange that extends parallel to the plane formed by the clamping member.

2. A diaphragm pump according to claim 1, **characterized in that** the circular clamping member is provided with said projecting flange substantially at the location of the outlet of the pipe system.

3. A diaphragm pump according to claim 1 or 2, **characterized in that** the projecting flange is provided along the upper half of the circumferential edge of the clamping member.

4. A diaphragm pump according to claim 3, **characterized in that** the length of the projecting flange varies along the upper half of the circumferential edge.

5. A diaphragm pump according to claim 4, **characterized in that** the length of the projecting flange is greatest near the outlet.

6. A diaphragm pump according to claim 4 or 5, **characterized in that** the length of the projecting flange substantially equals zero in the middle of the circumferential edge, in particular up to about 30° below the middle of the circumferential edge.

7. A diaphragm pump according to any one of the preceding claims, **characterized in that** the end edge of the projecting flange is

curved.

8. A diaphragm pump according to claim 7, **characterized in that** the radius of curvature of the end edge is approximately equal to the thickness of the diaphragm.

9. A diaphragm pump according to claim 7 or 8, **characterized in that** the curvature of the end edge is proportional to the counter curvature of the preformed diaphragm.

10. A diaphragm pump according to any one or more of the claims 7-9, **characterized in that** the radius of curvature of the end edge ranges from 8 to 80 mm.

11. A diaphragm pump according to claim 10, **characterized in that** the curvature of the end edge extends accordance to a second or higher degree polynomial.